UMW AO4800

30V Dual N-Channel MOSFET

1.Description

The AO4800 uses advanced trench technology toprovide excellent $R_{DS(ON)}$ and low gate charge. The two MOSFETs make a compact and efficient switch and synchronous rectifier combination for use in buck converters.

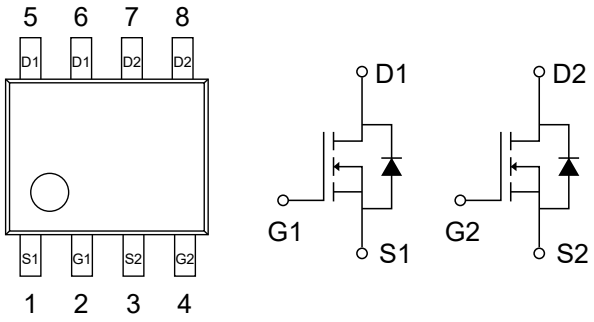
2.Features

- $V_{DS\ (V)}$= 30V
- I_D=6.9A
- $R_{DS(ON)}$<27mΩ(V_{GS}=10V)
- $R_{DS(ON)}$<32mΩ(V_{GS}=4.5V)
- $R_{DS(ON)}$<50mΩ(V_{GS}=2.5V)

3.Pinning information

Pin	Symbol	Description
2,4	G1, G2	GATE
1,3	S1, S2	SOURCE
5,6,7,8	D1, D2	DRAIN

SOP-8



4.Absolute Maximum Ratings T_A=25°C unless otherwise noted

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current [A]	T_A=25°C	I_D	6.9	A
	T_A=70°C		5.8	
Pulsed Drain Current [B]		I_{DM}	40	
Power Dissipation	T_A=25°C	P_D	2	W
	T_A=70°C		1.44	
Junction and Storage Temperature Range		T_J,T_{STG}	-55 to 150	°C

5.Thermal Characteristics

Parameter		Symbol	Typ	Max	Units
Maximum Junction-to-Ambient [A]	t ≤ 10s	$R_{\theta JA}$	48	62.5	°C/W
Maximum Junction-to-Ambient [A]	Steady-State		74	110	°C/W
Maximum Junction-to-Lead [C]	Steady-State	$R_{\theta JL}$	35	40	°C/W

6.Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=250μA, V_{GS}=0V	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V, V_{GS}=0V		0.002	1	μA
		T_J=55°C			5	
Gate-Body leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±12V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.7	1	1.4	V
On state drain current	$I_{D(ON)}$	V_{GS}=4.5V, V_{DS}=5V	25			A
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=6.9A		22.6	27	mΩ
		T_J=55°C		33	40	mΩ
		V_{GS}=4.5V, I_D=6A		20	32	mΩ
		V_{DS}=2.5V, I_D=5A		25	50	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=5A	12	16		S
Diode Forward Voltage	V_{SD}	I_S=1A		0.71	1	V
Maximum Body-Diode Continuous Current	I_S				3	A
DYNAMIC PARAMETERS						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=15V, f=1MHz		858	1050	pF
Output Capacitance	C_{oss}			110		pF
Reverse Transfer Capacitance	C_{rss}			80		pF
Gate resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz		1.24	3.6	Ω

SWITCHING PARAMETERS						
Total Gate Charge	Q_g	V_{GS}=4.5V, V_{DS}=15V I_D=6.9A		9.6	12	nC
Gate Source Charge	Q_{gs}			1.65		nC
Gate Drain Charge	Q_{gd}			3		nC
Turn-On DelayTime	$t_{D(on)}$	V_{GS}=10V, V_{DS}=15V R_L=2.2Ω,R_{GEN}=3Ω		3.2	4.8	ns
Turn-On Rise Time	t_r			4.1	6.2	ns
Turn-Off DelayTime	$t_{D(off)}$			26.3	40	ns
Turn-Off Fall Time	t_f			3.7	5.5	ns
Body Diode Reverse Recovery Time	t_{rr}	I_F=5A, dI/dt=100A/μs		15.5	20	ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=5A, dI/dt=100A/μs		7.9	12	nC

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in ^{2} FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design. The current rating is based on the t ≤ 10s thermal resistance rating.

B: Repetitive rating, pulse width limited by junction temperature.

C. The $R_{\theta JA}$ is the sum of the thermal impedence from junction to lead $R_{\theta JL}$ and lead to ambient.

D. The static characteristics in Figures 1 to 6 are obtained using 80 μs pulses, duty cycle 0.5% max.

E. These tests are performed with the device mounted on 1 in ^{2} FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The SOA curve provides a single pulse rating.

7.1TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

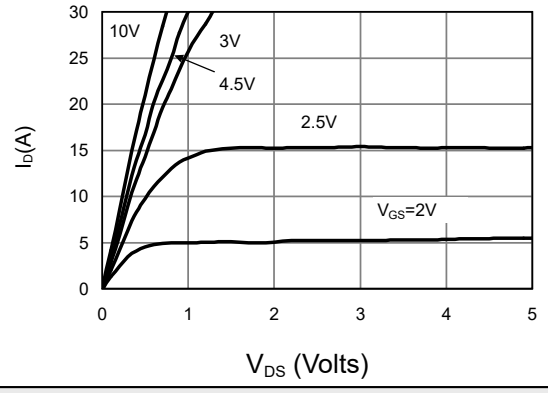


Fig 1: On-Region Characteristics

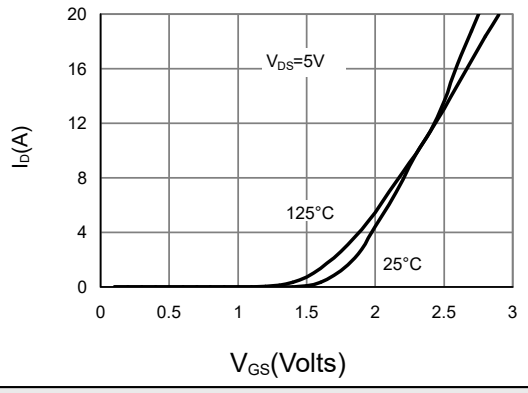


Figure 2: Transfer Characteristics

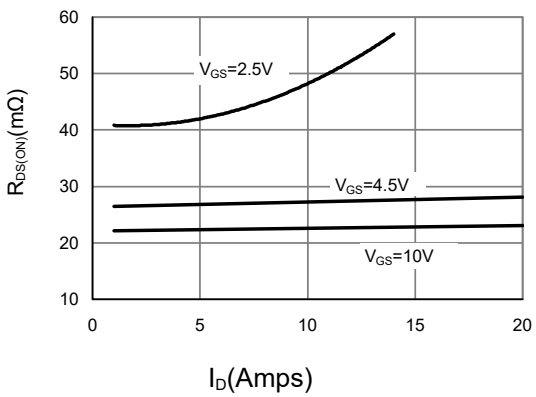


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

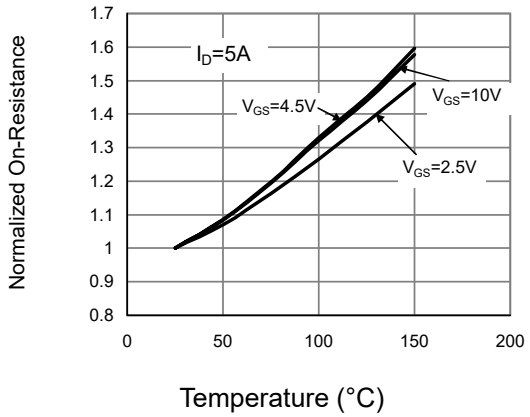


Figure 4: On-Resistance vs. Junction Temperature

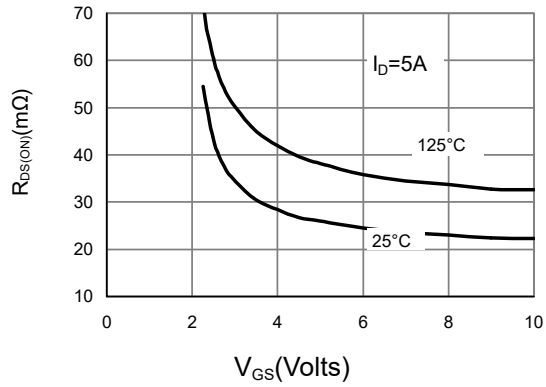


Figure 5: On-Resistance vs. Gate-Source Voltage

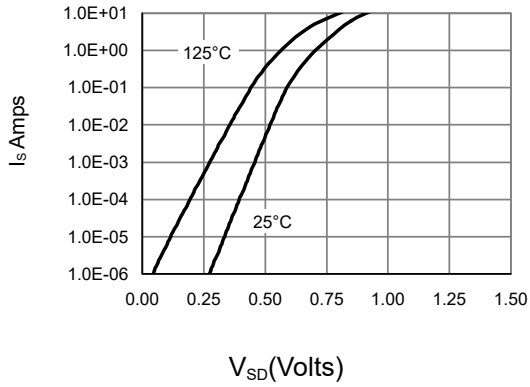


Figure 6: Body-Diode Characteristics

7.2TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

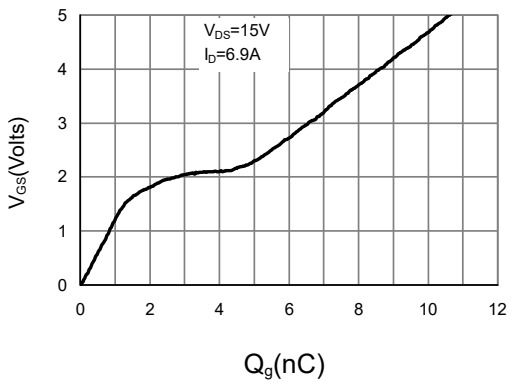


Figure 7: Gate-Charge Characteristics

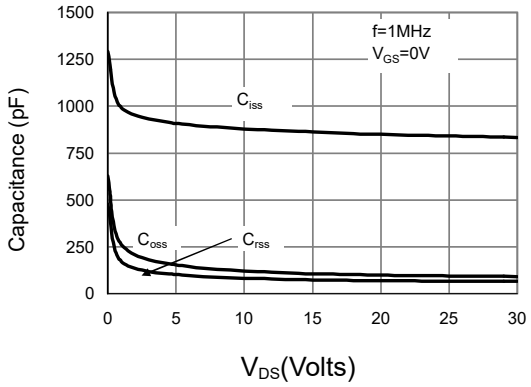


Figure 8: Capacitance Characteristics

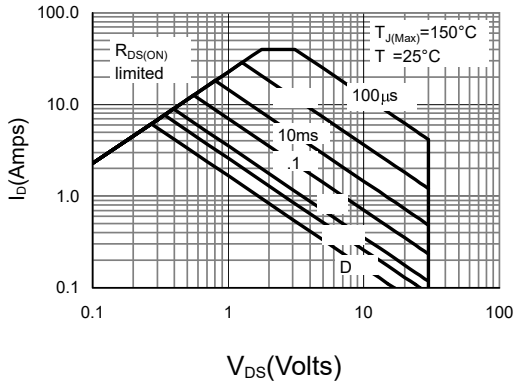


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

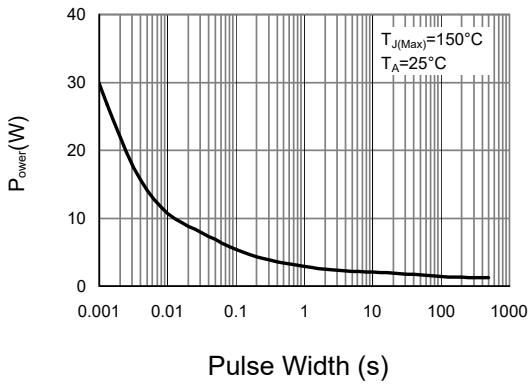


Figure 10: Single Pulse Power Rating Junction-to -Ambient (Note E)

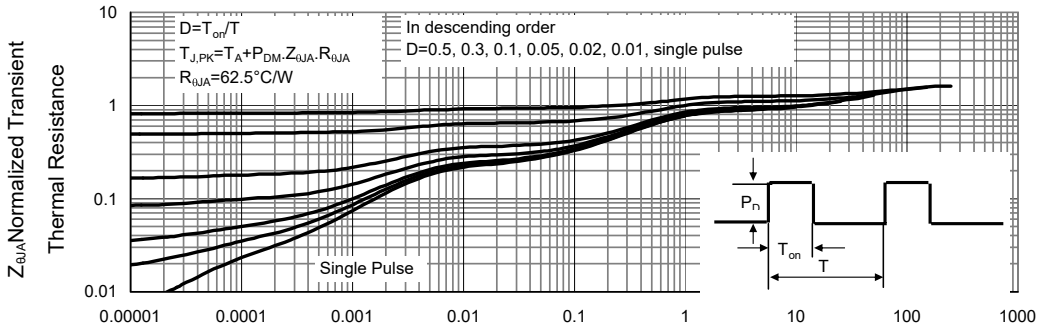
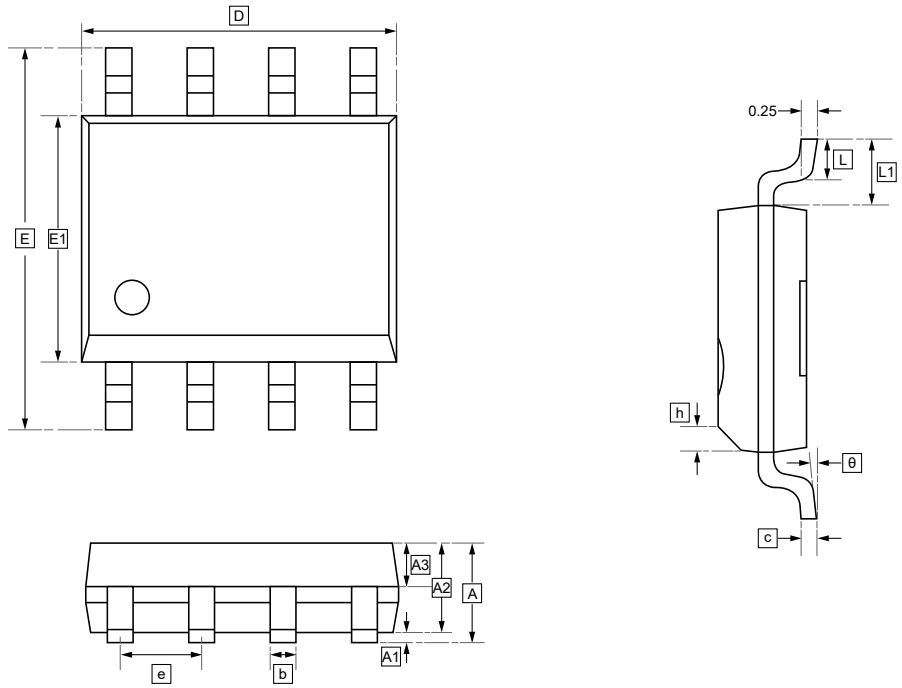


Figure 11: Normalized Maximum Transient Thermal Impedance

8.SOP-8 Package Outline Dimensions

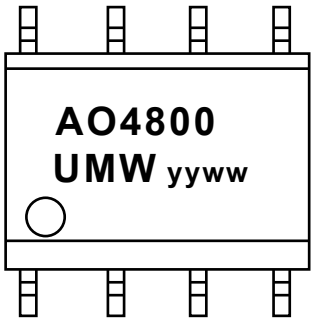


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	A3	b	c	D	E	E1	e	h	L
Min	-	0.05	1.30	0.60	0.39	0.20	4.70	5.80	3.80	1.24	0.30	0.50
Max	1.75	0.20	1.50	0.70	0.47	0.24	5.10	6.20	4.00	1.30	0.50	0.80

Symbol	L1	θ
Min	1.00	0°
Max	1.10	8°

9.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW AO4800	SOP-8	3000	Tape and reel

10.Disclaimer

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